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| 10/653,510 | 09/02/2003 | Achim Hofmann | TRW(AS)6719 | 3891 |

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| EXAMINER |
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FLEMING, FAYE M

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| ART UNIT | PAPER NUMBER |
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3616

DATE MAILED: 07/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/653,510

Applicant(s)

HOFMANN ET AL.

Examiner

Joseph Rocca

Art Unit

3616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the igniter housings which, viewed transversely to a longitudinal extent of said gas generator, are arranged asymmetrically to said outer housing and the igniter housings which, viewed transversely to a longitudinal extent of said gas generator, are arranged asymmetrically to each other claimed in claims 14 and 15 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

Art Unit: 3616

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-10 and 14-16 are rejected under 35 U.S.C. 102(b) as being unpatentable over Canterbury (U.S. 6,149,193).

With respect to claim 1, Canterbury discloses a gas generator comprising an elongated outer housing (Figure 4, Element 60) that has end faces (Figure 4, Element 60) and a side wall (Figure 4, Element 60), and for each stage an associated igniter unit (Figure 4, Elements 4) said igniter units being mounted laterally to said side wall of said outer housing (Figure 2, Elements 12, 14, 54) with three stages, which can be activated independently of each other (Col. 3, Line 67 – Col. 4, Lines 1-4); see also (Col. 7, Lines 55-59) stating one or more chambers may be activated depending on the response chosen for an identified crash type.

With respect to claims 2, Canterbury discloses igniter units that are provided so as to extend radially from said outer housings. (Figure 4, Elements 44).

With respect to claim 3, Canterbury discloses the use of multiple igniter units that are identical in construction. (Figure 4, Elements 44).

With respect to claim 4, Canterbury teaches the use of a gas generator characterized in that said igniter units all have an identical orientation with respect to said outer housing. That is each igniter is orientated so that the housing (Figure 4, Element 60) extends inwardly.

With respect to claim 5, Canterbury further teaches the gas generator according to characterized in that each igniter unit has rear, electrical contacts (Figure 4, Element 20) facing away from said outer housing (Figure 4, Element 20).

With respect to claim 6, Canterbury further teaches a gas generator wherein in said outer housing (Figure 4, Element 60) has a passage opening for each igniter unit (Figure 4, Element 24) and outlet openings (Figure 4, Elements 16, 18, and 48) for generated gas for each stage said passage opening and said outlet openings being arranged in diametrically opposite regions of said outer housing.

With respect to claim 7, Canterbury discloses the use of a stages formed by associated combustion chambers filled with solid propellant (Col. 3, Lines 28-34).

With respect to claim 8, Canterbury discloses the gas generator according to claim 1, characterized in that said outer housing is modular in construction, by at least one stage lying between axially outer stages (Col. 6, Lines 57-58), having an outer housing section formed by a tubular part (Col. 6, Lines 58-61).

With respect to claims 9 and 10, Canterbury further discloses a gas generator according to claim 8, further characterized in that disc-shaped, axial dividing walls

Art Unit: 3616

(Figure 4, Element 34) are provided between said outer housing sections (Col. 6, Lines 58-61); further characterized in that all said axial dividing walls have the same geometry and dimensions (Figure 4, Element 34).

With respect to claim 14, Canterbury discloses the gas generator according to claim 1, characterized in that said igniter units have igniter housings (Figure 4, Element 44) which, viewed transversely to a longitudinal extent of said gas generator, are arranged asymmetrically to said outer housings, as is shown in figure 4.

With respect to claim 15, Canterbury discloses the gas generator according to claim 1, characterized in that said igniter units have igniter housings (Figure 4, Element 44) which, viewed transversely to a longitudinal extent of said gas generator, are arranged asymmetrically to each other, as is shown in figure 4.

With respect to claim 16, Canterbury discloses the gas generator according to claim 1, characterized in that said igniters have associated igniter housings which are constructed as a fastening means for arresting said gas generator in a module. In the Canterbury reference all of the associated igniter housings shown in Figure 4, are made of metal such as steel or aluminum (Col. 6, Lines 36-38) and secured together by welds (Figure 4, Elements 46) to form a module.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable in view of Canterbury in view of Kurokawa (U.S. 3,724,870). Canterbury teaches both a two and three igniter gas generator having a gas generating output that is varied, in which the output of the first igniter is equal to a range of anywhere from one-fifth (20%) to four-fifths (80%) of the total out put of the overall generator. (Col. 6, Lines 12-21). Canterbury further teaches that where there are three or more chambers, the gas generator may be divided equally among the chambers or unequally, depending upon the design requirements of the inflator. (Col. 6, Lines 21-23). Canterbury does not specifically teach a gas generator that is characterized as having either three stages having a gas generating output of which amounts to approximately $1/7$, $2/7$ and $4/7$ of a total gas generating output of said gas generator or a gas generator characterized in that it has four stages and a gas generating output of which amounts to approximately 7%, 13%, 27% and 53% of a total gas generating output of said gas generator. Nevertheless, Canterbury discloses that output of each igniter chamber may be varied, depending upon the design requirements of the inflator. (Col. 6, Lines 22-23). The Kurokawa reference further teaches the use of both three and four chamber gas generators, where each chamber may be comprised of a varied amount of gas-producing compound. (Pg. 5, Examples 2 and 3).

At the time of invention it would have been obvious to a person of ordinary skill in the art to modify the Canterbury reference with that of the Kurokawa by modifying the output of each individual stage of the gas generator, so that output of a three-chamber

Art Unit: 3616

device is approximately 1/7, 2/7 and 4/7 of the total gas generating output or approximately 7%, 13%, 27% and 53% of total generator output for a four-chamber embodiment. The motivation for varying the individual generator output is to create a gas generator, which meets given design requirements of the inflator for certain applications, so as to optimize the protection of vehicle occupants of a particular type of vehicle. Therefore, it would have been obvious to combine the teachings of Canterbury with Kurokawa for the purpose of creating a gas generator featuring the specific outputs set forth in claims 11 and 12.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination Canterbury and Faigle (U.S. 5,460,405). Canterbury discloses the gas generator according to claim 1, note 102 rejection above, but does not disclose a gas generator wherein at least two stages have at least one of different gas generating outputs. Additionally Faigle discloses a gas generator wherein at least two stages have at least one of different gas generating outputs (Col. 3, Lines 14-17), different geometries (Col. 5, Line 26), and different charge mixtures (Col. 3, Lines 14-17) utilizing solid propellant (Col.3, Lines 3-5). At the time of invention it would have been obvious to modify the Canterbury reference with that of Faigle by modifying the gas generator to contain different generating outputs, geometries, and charge mixtures. The motivation for modifying these two references would be to create a device that is better able to protect occupants of a vehicle in the event of a variety of crash conditions such as that of a second impact crash.

Conclusion

Art Unit: 3616

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following prior art is brought to the applicant's attention.

Zander (G.B. 2,218,698 A) is brought to your attention because it discloses a gas generator comprising of multiple inflators designed for a vehicle passive restraint system.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Rocca whose telephone number is (571) 272-7721. The examiner can normally be reached on M-F 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Dickson can be reached on (703) 308-2089. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

J.R.

E. M. Fleming 06/23/05
Primary
EAYE M. FLEMING
PATENT EXAMINER